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# PATENT ABSTRACTS OF JAPAN

4

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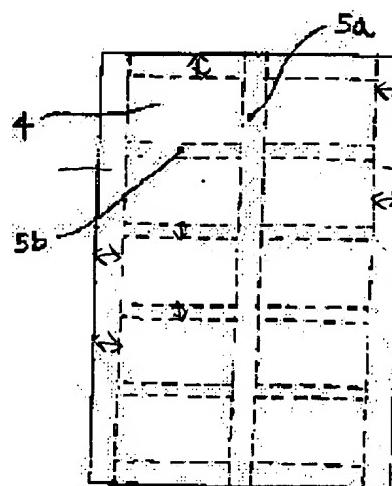
(71)Applicant : **SEIKO EPSON CORP**  
 (72)Inventor : **YAMAOKA GOICHI**

## (54) RECORDING MEDIUM WITH SEPARATING MEANS

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide full-size printing unit pieces without blank sections on the outer peripheries of the unit printing pieces, reduce the perforations as a separating means and improve durability for a recording medium with a means for separating a paper into a plurality of unit printing pieces.

**SOLUTION:** In a recording medium 1 with a means of separating a paper into a plurality of unit printing pieces 4, waste areas after separation are provided on the outside of the peripheries of the unit printing pieces should be formed basically, and the constitution in which separating means in the vertical and horizontal directions reach the outer periphery of the recording medium, or the constitution in which one of the vertical and horizontal direction separating means reaches the outer periphery of the recording medium and other separating means are formed only on a pair of outer peripheries of the unit printing pieces, or other constitutions of separating means are formed selectively.



## LEGAL STATUS

- [Date of request for examination]
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**CLAIMS**

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[Claim]

[Claim 1] The record medium characterized by preparing the abandonment field after separating into the outside of the periphery side of the aforementioned piece of simple substance printing in the record medium which has a means to separate into two or more pieces of simple substance printing.

[Claim 2] The record medium of the claim 1 publication characterized by having made length and the lateral separation means reach the periphery side of a record medium, and constituting them.

[Claim 3] The record medium characterized by having made either length or the lateral separation means reach the periphery side of a record medium, and forming the separation means of another side by two or more length and the lateral separation means in the record medium with which two or more pieces of a printing simple substance and abandonment fields are constituted only the periphery side (one pair or one side) of this piece of simple substance printing.

[Claim 4] the claim 1 characterized by establishing the length which reaches the periphery side of a record medium in an abandonment field, or a lateral account separation means, or 3 -- a record medium given in either

[Claim 5] the claim 1 characterized by a means to separate into two or more pieces of simple substance printing consisting of a perforation, or 4 -- either -- alike -- the record medium of a publication

[Claim 6] The claim 1 characterized by constituting a perforation intersection from a T character type perforation blade, or a record medium given in 4.

[Claim 7] A record medium given in either the claim 1 to which the cut section length of margin perforation scale division is characterized by the \*\*\*\*\* from the forms perforation scale-division cut section in the record medium with which a separation means consists of a perforation, 4 or the claim 6.

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[Translation done.]

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WPI Acc No: 1999-035321/**199903**  
XRPX Acc No: N99-026386

Sport performance monitoring system for e.g. **skiing** - uses one or more sensors integrated into sport implements such as snowboard or **ski**, for measuring airtime, **power**, speed and or drop distance for jump

Patent Assignee: PHATRAT TECHNOLOGY INC (PHAT-N); DARCY D (DARC-I); FLENTOV P (FLEN-I); VOCK C A (VOCK-I)

Inventor: BODKIN A; BURKE S; DARCY D; FINBERG S; LARKIN A F; MARSHALL C; VOCK C A; YOUNGS P; FLENTOV P; GREALISH K J

Number of Countries: 024 Number of Patents: 005

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 6266623	B1	20010724	US 94344485	A	19941121	200146
			US 97867083	A	19970602	
US 20010037179	A1	20011101	US 94344485	A	19941121	200168
			US 97867083	A	19970602	
			US 2001886578	A	20010621	

Priority Applications (No Type Date): US 9877251 P 19980309; US 97867083 A 19970602; US 94344485 A 19941121; US 2001886578 A 20010621

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
US 6266623	B1		G01L-005/00	CIP of application US 94344485 CIP of patent US 5636146
US 20010037179	A1		G01L-001/00	CIP of application US 94344485 Cont of application US 97867083 CIP of patent US 5636146 Cont of patent US 6266623

Abstract (Basic): WO 9854581 A

The performance monitoring system includes a controller subsystem (12) connected with one or more of the following sensors (14a-14d): an airtime sensor, a speed sensor, a **power** sensor, and a drop distance sensor. The controller subsystem includes a microprocessor (12a) and can include preamplifiers and analogue to digital converters (12d) to interface with the sensors. Preferably, the controller subsystem also includes digital memory (12b) to store parameters for the sensors and to store data such as **power**, airtime, speed and drop distance for later retrieval. A battery (30) is used to **power** the controller subsystem. A display (24c) can be integrated with the sensing unit to provide direct feedback to the performance data. A user interface (24) is also integrated with the sensing unit to provide user control of the sensing unit. Preferably, the sensing unit is mounted with a sporting vehicle, and further includes a data unit (50) for interfacing with the sensing unit to acquire performance data. Preferably, a data transfer section (22) is provided for remotely transmitting performance data to a data unit or a base station.

USE - For sporting activities such as **skiing**, snowboarding,

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mountain biking, windsurfing, skateboarding, roller-blading, kayaking,  
racing, and running.

Dwg.1/84

STIC-EIC 2800 CP4-9C18 Irina Speckhard 308-6559

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## DETAILED DESCRIPTION

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[Detailed description]

[0001]

[The technical field to which invention belongs] this invention relates to the structure of printing record media, such as a character and a picture image, by the printer etc., and relates to the structure of a detachable record medium by the perforation.

[0002]

[Prior art] After it is [ alone ] too small although it is usually, being printed [ two or more ] by the record medium with which the ink-jet record printer which has spread widely now is called fixed form papers, such as A4 and A3, can be comparatively located in a line with the record medium of size \*\*\*\* since printing is difficult, and they print the thing of the small size of a card etc., they separate it, and it has obtained the piece of simple substance printing. \*\* which the formula into which the perforation was put in all directions is recently proposed, and can do separation easily by a man's hand although the technique of separation was conventionally performed by scissors, the cutter, etc. -- it became like

[0003] However, it becomes conditions to surely print it inside a perforation, since what is only in every direction containing a perforation is common, the periphery of the piece of simple substance printing which is shown in drawing 1 and with which a perforation adjoins, and. That is, if it overflows outside a perforation and it is printed, the adjoining piece of simple substance printing and adjoining printing will lap. Of course, although it is satisfactory if the printing position can be correctly set up on a perforation, when perforation position precision and printer printing-position precision are taken into consideration, it cannot be overemphasized that it is impossible. Therefore, the non-printed section surely produces the periphery section of the piece of simple substance printing, printing all over the piece of simple substance printing has the fault which cannot perform printing of the full size which becomes impossible and does not have the frame generally said, and it is decreasing the value added of printed matter.

[0004] Furthermore, when the piece of simple substance printing constituted by the perforation in every direction is a small size, the number in every direction of perforations or the intersection of a perforation increases, and a manipulation of a perforation not only becomes complicated, but becomes easy to produce various problems, such as a debasement by the deflection of the sewing-machine blade with insufficient cost rise or intensity to twist.

[0005]

[Object of the Invention] this invention offers the perforation configuration which can perform the enhancement in easy-izing of a perforation manipulation type manipulation, and the quality of a workpiece and endurance, a cost reduction, etc. as the 2nd while it offers the configuration of the perforation in which full-size printing which does not have the non-printed section in the periphery section of the piece of simple substance printing as the fault shown above, i.e., the 1st, in the piece of simple substance printing arranged by the perforation is possible. [ two or more ] Moreover, it unites and the configuration which prevents the enhancement (i.e., the poor flatness of the record medium by perforation manipulation) of a conveyance property to the printer of the record medium [ itself ] by perforation manipulation is also offered.

[0006]

[The means for solving a technical problem] this invention sets it as the 1st purpose to carry out full-size printing which does not have the non-printed section in the piece of simple substance printing constituted by the perforation as above-mentioned, and explains the detail of the configuration of this invention with a drawing below.

[0007] Drawing 1 shows the configuration of the conventional perforation, two or more margin perforation scale divisions 2 and the forms perforation scale division 3 are formed in a record medium 1, and the piece 4 of simple substance printing is constituted by the fraction surrounded by the in-every-direction perforation. In drawing 1, the piece 4 of simple substance printing of ten sheets is constituted by the record medium 1 of one sheet. Although this record medium 1 is printed with an ink jet printer by each piece 4 of simple substance printing and it is separated along with perforations 2 and 3, it is necessary to set up in this case so that the character and picture image which are printed to the piece 4 of simple substance printing with a natural thing may not start perforations 2 and 3. If perforations 2 and 3 are protruded and printing is carried out, and it will be printed by the piece 4 of simple substance printing which adjoins with a natural thing, and one sheet of the piece of simple substance printing cannot be used, and it will become or it will be printed by both, it becomes double printing and both of pieces of simple substance printing can be used. Therefore, in picture image printing, surely printing inside a perforation becomes indispensable conditions, frame-like the non-printed section will remain in the periphery, and the piece 4 of simple substance printing from which the perforation was separated will reduce the value added of printed matter as above-mentioned.

[0008] Drawing 2 shows the configuration of the separation means by the fundamental perforation of this invention, and all the contiguity sections of the piece 4 of simple substance printing are constituted by two margin perforation scale divisions 2a and 2b and the forms perforation scale divisions 3a and 3b except for the periphery section of a record medium 1. By this configuration, each piece 4 of simple substance printing will have the perforation which became independent, respectively in the periphery, and the contiguity section of the piece 4 of simple substance printing will have vertical abandonment field 5a and horizontal abandonment field 5b.

[0009] Drawing 3 explains this point to a detail more. Drawing 3 is what showed the configuration of the piece of simple substance printing and the relation of a printing domain by the perforation, and constitutes two or more pieces 4 of simple substance printing and abandonment fields in the record medium 1 by the above-mentioned margin perforation scale division 2 and the above-mentioned forms perforation scale division 3. Although printed by this record medium 1 by the printer, the printing domain is shown by the oblique-line fraction in drawing 3. That is, only dimension a is protruded and printed over the outside perimeter of a perforation to each piece 4 of simple substance printing, and the piece 4 of simple substance printing without a frame printed completely can be obtained by separating along with a perforation after that. In addition, although it cannot be overemphasized that the method of the parvus is good as much as possible since it is the cut-off fraction which is back-discarded, although dimension a which is the amount of flashes is determined by the printing-position precision of a printer etc., about a=1-1.5mm is usually desirable. Moreover, although it is satisfactory if there is a 2-time value of dimension a as a concrete value, although as few with a natural thing its one as possible is good since dimension b is an abandonment field, in order for printing to be made to lap, about +1 twice as manymm of the value of dimension a as this is desirable.

[0010] Although the record medium 1 printed as mentioned above is separated along with a perforation, by cutting off margin perforation scale division for the upper limit of a record medium 1 to a soffit, and cutting off forms perforation scale division after that, in the perforation configuration which shows the technique to drawing 2, it is efficient, and it can be cut off finely. It is the same even if it cuts out from forms perforation scale division first of course. Furthermore, the more desirable way of separating a perforation can be finely cut, if bending is operated at once along with a perforation and separation operation is carried out after that.

[0011] In addition, although the dimension of the perforation [ itself ] is processible from a comparatively rude thing to a fine thing, in order to finish a cutoff cross section finely, the fine perforation of 0.2mm of the cut sections generally called micro perforation and about 0.15mm of the non-cutting sections is desirable.

[0012] Moreover, although it is required to perform the image information processing of multiple attachment with a personal computer etc. in printing, it cannot be overemphasized that it does not matter whether all of the pieces of simple substance printing are the same objects or each differs.

[0013] Next, the perforation type for processing the perforation of this invention shown in drawing 2 is explained.

[0014] Generally the manipulation technique of a perforation and equipment are well-known, for example, the Thompson type omission machine etc. is known well. If the layout of a perforation type perforation blade is explained concretely, drawing 4 shows the configuration layout of a perforation blade perforation manipulation type [ for processing the perforation shown in drawing 2 ], and the margin perforation blade 6 will be constituted from a blade which continued from the upper limit of a record medium 1 to the soffit, and will divide and arrange the forms perforation blade between margin perforation blades. In this case, a forms perforation blade consists of the forms perforation blade 7b constituted in one side of the piece 4 of simple substance printing in the forms perforation blade 7, forms perforation blade 7a constituted by \*\*\*\* of print media 1, and the center.

[0015] Therefore, as shown in drawing 5, the non-cut section 8 produces how in a part for the intersection of margin perforation scale division and forms perforation scale division. [ the perforation of the four-corners fraction of the piece 4 of simple substance printing ] If this non-cut section 8 is too large, although fluff will occur and a result of separation will become bad in the case of separation, a problem is lost by managing by 1mm or less.

[0016] When it not only becomes the mold with very high price, but a part of mold is damaged in an one apparatus formula about a perforation type formula since a manipulation is complicated although the one apparatus formula and the combination formula of a sheet metal perforation blade were put in practical use, all become remaking, and since it is lacking in practicality, use is seldom carried out.

[0017] On the other hand, the combination formula of a sheet metal perforation blade is constituted, combining a sheet metal-like blade in all directions, in order to make a mold efficiently, and even if a part of blade is damaged, it is easily fixable [ formula ] by exchange of only a crash fraction, while structure is easy -- etc. -- it is very practical technique and the present mold structure is in use this invention is also considered on the assumption that this formula.

[0018] However, there is a weak point also in the combination formula of a sheet metal blade. That is, since it fixes to the base and a sheet metal perforation blade is constituted as the item of "Object of the Invention" of this specification described the part, although fixation can be done certainly in the case of the sheet metal perforation blade with a length and there is also little deformation, a sheet metal perforation blade is short, and the parvus case has inadequate fixation and has the fault which is easy to carry out deformation.

[0019] Short \*\*\*\* and an intensity also have the length of the forms perforation blades 7a and 7b formed since abandonment field 5a and 5b \*\* which are the contiguity section of the piece 4 of simple substance printing are specifically constituted from a case of drawing 2 of this invention, and drawing 3 very as weak as 5mm order. Therefore, it is easy to produce a problem in endurance, and the deflection of a blade is produced as a result. This status is shown in drawing 6, drawing 7, and drawing 8. The A-A cross section of drawing 5 is shown, as for drawing 6 and 7, drawing 6 shows the normal status, and drawing 7 shows the status

that deflection arose to a perforation blade. Separation is well impossible, when a partial gap of a perforation will occur as forms perforation scale division are shown in drawing 8 instead of a straight line with a natural thing and it will separate forms perforation scale division first, if it is processed in the status shown in drawing 7, i.e., the status that the perforation blade bent. Of course, a problem will not be produced if forms perforation scale division are separated after detaching all margin perforation scale divisions. However, if the perforation is contained at all, since a user separates forms perforation scale division previously, he can never call it the desirable status.

[0020] this invention proposes the configuration shown in drawing 9, as a result of repeating enhancement that the above fault should be eliminated. In the record medium with which two or more pieces of a printing simple substance and abandonment fields are constituted by the length of a plurality [ formula / this ], and the lateral separation means It is what either length or a lateral separation means is made to reach the periphery side of a record medium, and forms the separation means of another side only one pair of periphery sides of this piece of simple substance printing. It is what deleted the perforation which in other words leaves margin perforation scale division, and was constituted by the abandonment fractions 5a and 5b of the perforation of the garbage of forms perforation scale division, i.e., drawing 2, and the forms perforation scale division of drawing 9. In the layout pattern of the perforation blade of drawing 4, it leaves the perforation blade 7 which constitutes the piece 4 of simple substance printing, and it deletes the perforation blade of 7a and 7b.

[0021] Therefore, all the short perforation blades constituted by the abandonment field are lost, and a large perforation type cost reduction and a high durable perforation type can be realized. In the example of drawing 9, a maximum of 24 short perforation blades can be lost. Of course, it is also possible to leave a short perforation alternatively if needed, and it can dissociate from the fraction which forms perforation scale division consist of continuously in this case first. Moreover, in this example, although the forms perforation scale division in an abandonment field are deleted, you may be a reverse configuration in every direction.

[0022]

[Gestalt of implementation of invention] The gestalt of enforcement of this invention is explained more concretely below.

[0023] (The 1st example) in every direction [ by showing this example in drawing 2 and the item of a "The means for solving a technical problem" explaining a schema, although the size of a record medium 1 arranged eight piece of simple substance printing 4 \*\*s of the size of a card in this size in A4 size, it comes out and there is, and ] -- the fine perforation of 0.2mm of the cut sections and about 0.15mm of the non-cutting sections is constituted by all

[0024] Although this example is a direction with many the numbers 4, i.e., the piece of simple substance printing, of a perforation and some flatness becomes bad by perforation manipulation, it is uninfluential in conveyance of a printer and quality of image. However, bending of the perforation section will occur and it is begun to influence a picture image quality, if a perforation enters too much strongly.

[0025] Therefore, when there are many pieces 4 of simple substance printing, it is desirable to use the technique shown in following drawing 9 with few perforations. In addition, since the perforation is constituted in all directions, the advantage of this configuration is in the point which does not have a limit in a separation procedure.

[0026] (The 2nd example) This example is shown in drawing 9, is what deleted the perforation constituted in the abandonment fields 5a and 5b which are the contiguity sections of the piece 4 of simple substance printing of the configuration of the 1st example except for the part, and serves as the record medium containing a perforation which constituted from a perforation of necessary minimum and was felt very refreshed. As for this configuration, there are few quantities of a perforation considering the quantity of the piece 4 of simple substance printing, there are very few falls of the flatness of the record medium 1 by perforation manipulation, and a printing quality can maintain the status that there is no perforation, as it is. Moreover, a perforation type manipulation is also easy, endurance is also very high, and when there are many pieces 4 of simple substance printing, a very big effect is produced.

[0027] In addition, although it becomes conditions to separate forms perforation scale division after the procedure of separation with this configuration separates margin perforation scale division, since the separation from forms perforation scale division cannot be performed, it will surely be separated from margin perforation scale division, also produces the advantage of the grade whose failure of separation is lost, and does not sense especially un-arranging.

[0028] (The 3rd example) This example constitutes the forms perforation scale division for a large separation of print media 1 which reach the periphery of print media mostly five in an abandonment field of a center in the 2nd example, is shown in drawing 10 and enables it to be that whose separation was made to be completed also by these large separation forms perforation scale division, and to divide print media 1 into two, without separating piece of simple substance printing 4 \*\*s. Of course, if forms perforation scale division are put in two or more, two or more separations will be attained, and a configuration called an inside separation and a small separation from the first in a large separation can offer a thing.

[0029] Furthermore, it is also possible to communalize the forms perforation scale division which constitute the piece 4 of simple substance printing, and the perforation for a large separation, in this case, there are few perforation blades and there is a \*\*\*\*\* advantage.

[0030] Also in any, the record medium which is effective technique when this configuration has many pieces 4 of simple substance printing, and has a user-friendly separation means since a separation number can be chosen if needed can be offered.

[0031] (The 4th example) This example is shown in drawing 11, it is what made the perforation configuration of drawing 2, A section of drawing 3, and B section, i.e., an in-every-direction perforation intersection, the T character configuration, and it is what constituted the perforation type of this fraction independently, and the separation configuration of the four corners of the piece 4 of simple substance printing has the effect finished very finely. However, since a manipulation becomes complicated, the

intersection of an in-every-direction perforation is effective in the few thing.

[0032] (The 5th example) This example is shown in drawing 12, it is the configuration which can be used on the assumption that the case where there are few basic configurations of the 2nd example of this invention and quantities of the piece 4 of simple substance printing, and is what made the length of the cut section of margin perforation scale division larger than the length of the cut section of forms perforation scale division, and the result configuration after cutoff can obtain a very good thing. Usually, if the perforation cut section is lengthened although it is long in the cut fraction of a perforation and it is required to constitute the non-cut section short in order to clean a result of separation of the appearance configuration by the perforation, since the deformation intensity of a record medium 1 will become weak, and it will be bad and the flatness of print media will become still large also in the curl by perforation manipulation, it is easy to produce a problem at the time of conveyance by the printer. A conveyance top problem tends to generate especially the deformation by the lateral perforation.

[0033] Since the length of forms perforation scale division is constituted comparatively shorter in the case of this example, even if there is almost no bending by forms perforation scale division and it constitutes the length of the cut section of margin perforation scale division for a long time, it can use it satisfactory from that there are few perforations collectively and there being few influence degrees at the time of conveyance of bending by margin perforation scale division.

[0034]

[Effect of the invention] In the piece of simple substance printing constituted by the perforation which is a separation means as this invention was described at the beginning (1) It is what carried out the technical-problem resolution for the purpose of planning a reduction of the perforation blade which are carrying out full-size printing without the non-printed section, and (2) separation means, and enhancement \*\*\*\* of endurance. The separation means in every direction prepared in the record medium constitutes an abandonment field, and the high printed matter of the value added which does not have the non-printed frame of the non-printed section, the shape of i.e., a frame, in the periphery of the piece of simple substance printing can be offered by overflowing into an abandonment field and printing.

[0035] moreover, in every direction by making a separation means in every direction reach the periphery side of a record medium -- either -- a separation -- being possible -- it becomes and a user-friendly record medium can be obtained

[0036] By making either length or a lateral separation means reach the periphery side of a record medium, forming the separation means of another side only one pair of periphery sides of this piece of simple substance printing, and deleting especially, a part of perforation with the short length which is a separation means in an abandonment field While the installation quantity of a perforation blade is decreased and low-cost-ization is realized, an installation is difficult and the effect of the grade [ many ] which can aim at enhancement in the endurance of a perforation blade is produced by deleting a part of short perforation with a weak intensity.

[0037] Furthermore, the big effect also about prevention is produced for the enhancement (i.e., the poor flatness of the record medium by perforation manipulation) of a conveyance property to the printer of the record medium [ itself ] by perforation manipulation. That is, the effect that the flatness of a record medium can be improved and printer conveyance nature can be improved is also produced by lessening the quantity of a perforation.

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**TECHNICAL FIELD**

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[The technical field to which invention belongs] this invention relates to the structure of printing record media, such as a character and a picture image, by the printer etc., and relates to the structure of a detachable record medium by the perforation.

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PRIOR ART

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[Prior art] After it is [ alone ] too small although it is usually, being printed [ two or more ] by the record medium with which the ink-jet record printer which has spread widely now is called fixed form papers, such as A4 and A3, can be comparatively located in a line with the record medium of size \*\*\*\* since printing is difficult, and they print the thing of the small size of a card etc., they separate it, and it has obtained the piece of simple substance printing. \*\* which the formula into which the perforation was put in all directions is recently proposed, and can do separation easily by a man's hand although the technique of separation was conventionally performed by scissors, the cutter, etc. -- it became like

[0003] However, it becomes conditions to surely print it inside a perforation, since what is only in every direction containing a perforation is common, the periphery of the piece of simple substance printing which is shown in drawing 1 and with which a perforation adjoins, and. That is, if it overflows outside a perforation and it is printed, the adjoining piece of simple substance printing and adjoining printing will lap. Of course, although it is satisfactory if the printing position can be correctly set up on a perforation, when perforation position precision and printer printing-position precision are taken into consideration, it cannot be overemphasized that it is impossible. Therefore, the non-printed section surely produces the periphery section of the piece of simple substance printing, printing all over the piece of simple substance printing has the fault which cannot perform printing of the full size which becomes impossible and does not have the frame generally said, and it is decreasing the value added of printed matter.

[0004] Furthermore, when the piece of simple substance printing constituted by the perforation in every direction is a small size, the number in every direction of perforations or the intersection of a perforation increases, and a manipulation of a perforation not only becomes complicated, but becomes easy to produce various problems, such as a debasement by the deflection of the sewing-machine blade with insufficient cost rise or intensity to twist.

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#### EFFECT OF THE INVENTION

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[Effect of the invention] In the piece of simple substance printing constituted by the perforation which is a separation means as this invention was described at the beginning (1) It is what carried out the technical-problem resolution for the purpose of planning a reduction of the perforation blade which are carrying out full-size printing without the non-printed section, and (2) separation means, and enhancement \*\*\*\* of endurance. The separation means in every direction prepared in the record medium constitutes an abandonment field, and the high printed matter of the value added which does not have the non-printed frame of the non-printed section, the shape of i.e., a frame, in the periphery of the piece of simple substance printing can be offered by overflowing into an abandonment field and printing.

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[0036] By making either length or a lateral separation means reach the periphery side of a record medium, forming the separation means of another side only one pair of periphery sides of this piece of simple substance printing, and deleting especially, a part of perforation with the short length which is a separation means in an abandonment field While the installation quantity of a perforation blade is decreased and low-cost-ization is realized, an installation is difficult and the effect of the grade [ many ] which can aim at enhancement in the endurance of a perforation blade is produced by deleting a part of short perforation with a weak intensity.

[0037] Furthermore, the big effect also about prevention is produced for the enhancement (i.e., the poor flatness of the record medium by perforation manipulation) of a conveyance property to the printer of the record medium [ itself ] by perforation manipulation. That is, the effect that the flatness of a record medium can be improved and printer conveyance nature can be improved is also produced by lessening the quantity of a perforation.

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TECHNICAL PROBLEM

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[Object of the Invention] this invention offers the perforation configuration which can perform the enhancement in easy-izing of a perforation manipulation type manipulation, and the quality of a workpiece and endurance, a cost reduction, etc. as the 2nd while it offers the configuration of the perforation in which full-size printing which does not have the non-printed section in the periphery section of the piece of simple substance printing as the fault shown above, i.e., the 1st, in the piece of simple substance printing arranged by the perforation is possible. [ two or more ] Moreover, it unites and the configuration which prevents the enhancement (i.e., the poor flatness of the record medium by perforation manipulation) of a conveyance property to the printer of the record medium [ itself ] by perforation manipulation is also offered.

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MEANS

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[The means for solving a technical problem] this invention sets it as the 1st purpose to carry out full-size printing which does not have the non-printed section in the piece of simple substance printing constituted by the perforation as above-mentioned, and explains the detail of the configuration of this invention with a drawing below.

[0007] Drawing 1 shows the configuration of the conventional perforation, two or more margin perforation scale divisions 2 and the forms perforation scale division 3 are formed in a record medium 1, and the piece 4 of simple substance printing is constituted by the fraction surrounded by the in-every-direction perforation. In drawing 1, the piece 4 of simple substance printing of ten sheets is constituted by the record medium 1 of one sheet. Although this record medium 1 is printed with an ink jet printer by each piece 4 of simple substance printing and it is separated along with perforations 2 and 3, it is necessary to set up in this case so that the character and picture image which are printed to the piece 4 of simple substance printing with a natural thing may not start perforations 2 and 3. If perforations 2 and 3 are protruded and printing is carried out, and it will be printed by the piece 4 of simple substance printing which adjoins with a natural thing, and one sheet of the piece of simple substance printing cannot be used, and it will become or it will be printed by both, it becomes double printing and both of pieces of simple substance printing can be used. Therefore, in picture image printing, surely printing inside a perforation becomes indispensable conditions, frame-like the non-printed section will remain in the periphery, and the piece 4 of simple substance printing from which the perforation was separated will reduce the value added of printed matter as above-mentioned.

[0008] Drawing 2 shows the configuration of the separation means by the fundamental perforation of this invention, and all the contiguity sections of the piece 4 of simple substance printing are constituted by two margin perforation scale divisions 2a and 2b and the forms perforation scale divisions 3a and 3b except for the periphery section of a record medium 1. By this configuration, each piece 4 of simple substance printing will have the perforation which became independent, respectively in the periphery, and the contiguity section of the piece 4 of simple substance printing will have vertical abandonment field 5a and horizontal abandonment field 5b.

[0009] Drawing 3 explains this point to a detail more. Drawing 3 is what showed the configuration of the piece of simple substance printing and the relation of a printing domain by the perforation, and constitutes two or more pieces 4 of simple substance printing and abandonment fields in the record medium 1 by the above-mentioned margin perforation scale division 2 and the above-mentioned forms perforation scale division 3. Although printed by this record medium 1 by the printer, the printing domain is shown by the oblique-line fraction in drawing 3. That is, only dimension a is protruded and printed over the outside perimeter of a perforation to each piece 4 of simple substance printing, and the piece 4 of simple substance printing without a frame printed completely can be obtained by separating along with a perforation after that. In addition, although it cannot be overemphasized that the method of the parvus is good as much as possible since it is the cut-off fraction which is back-discarded, although dimension a which is the amount of flashes is determined by the printing-position precision of a printer etc., about  $a=1\text{-}1.5\text{mm}$  is usually desirable. Moreover, although it is satisfactory if there is a 2-time value of dimension a as a concrete value, although as few with a natural thing its one as possible is good since dimension b is an abandonment field, in order for printing to be made to lap, about +1 twice as manymm of the value of dimension a as this is desirable.

[0010] Although the record medium 1 printed as mentioned above is separated along with a perforation, by cutting off margin perforation scale division for the upper limit of a record medium 1 to a soffit, and cutting off forms perforation scale division after that, in the perforation configuration which shows the technique to drawing 2, it is efficient, and it can be cut off finely. It is the same even if it cuts out from forms perforation scale division first of course. Furthermore, the more desirable way of separating a perforation can be finely cut, if bending is operated at once along with a perforation and separation operation is carried out after that.

[0011] In addition, although the dimension of the perforation [ itself ] is processible from a comparatively rude thing to a fine thing, in order to finish a cutoff cross section finely, the fine perforation of 0.2mm of the cut sections generally called micro perforation and about 0.15mm of the non-cutting sections is desirable.

[0012] Moreover, although it is required to perform the image information processing of multiple attachment with a personal computer etc. in printing, it cannot be overemphasized that it does not matter whether all of the pieces of simple substance printing are the same objects or each differs.

[0013] Next, the perforation type for processing the perforation of this invention shown in drawing 2 is explained.

[0014] Generally the manipulation technique of a perforation and equipment are well-known, for example, the Thompson type omission machine etc. is known well. If the layout of a perforation type perforation blade is explained concretely, drawing 4

shows the configuration layout of a perforation blade perforation manipulation type [ for processing the perforation shown in drawing 2 ], and the margin perforation blade 6 will be constituted from a blade which continued from the upper limit of a record medium 1 to the soffit, and will divide and arrange the forms perforation blade between margin perforation blades. In this case, a forms perforation blade consists of the forms perforation blade 7b constituted in one side of the piece 4 of simple substance printing in the forms perforation blade 7, forms perforation blade 7a constituted by \*\*\*\* of print media 1, and the center.

[0015] Therefore, as shown in drawing 5 , the non-cut section 8 produces how in a part for the intersection of margin perforation scale division and forms perforation scale division. [ the perforation of the four-corners fraction of the piece 4 of simple substance printing ] If this non-cut section 8 is too large, although fluff will occur and a result of separation will become bad in the case of separation, a problem is lost by managing by 1mm or less.

[0016] When it not only becomes the mold with very high price, but a part of mold is damaged in an one apparatus formula about a perforation type formula since a manipulation is complicated although the one apparatus formula and the combination formula of a sheet metal perforation blade were put in practical use, all become remaking, and since it is lacking in practicality, use is seldom carried out.

[0017] on the other hand, the combination formula of a sheet metal perforation blade is constituted, combining a sheet metal-like blade in all directions, in order to make a mold efficiently, and even if a part of blade is damaged, it is easily fixable [ formula ] by exchange of only a crash fraction, while structure is easy -- etc. -- it is very practical technique and the present mold structure is in use this invention is also considered on the assumption that this formula.

[0018] However, there is a weak point also in the combination formula of a sheet metal blade. Namely, this specification

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EXAMPLE

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(The 1st example) This example is shown in drawing 2.

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DESCRIPTION OF DRAWINGS

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[An easy explanation of a drawing]

- [Drawing 1] The plan showing the conventional common record medium containing a perforation.
- [Drawing 2] The plan showing the fundamental record medium containing a perforation of this invention.
- [Drawing 3] The part plan showing the printing field of the piece of simple substance printing of this invention.
- [Drawing 4] The perforation type block diagram of the record medium containing a perforation shown in drawing 2.
- [Drawing 5] A section enlarged view of drawing 2.
- [Drawing 6] The perforation type cross-section block diagram of the A-A cross section of drawing 5.
- [Drawing 7] Cross-section structural drawing showing the case where the perforation blade of drawing 6 inclines.
- [Drawing 8] The expansion partial diagrammatic view of the perforation manufactured with the perforation blade of drawing 7.
- [Drawing 9] The plan showing the 2nd example of this invention.
- [Drawing 10] The plan showing the 3rd example of this invention.
- [Drawing 11] The expansion plan showing the 4th example of this invention.
- [Drawing 12] The plan showing the 5th example of this invention.

[An explanation of a sign]

- 1 Record Medium
- 2 Margin Perforation Scale Division
- 3 Forms Perforation Scale Division
- 4 Piece of Simple Substance Printing
- 5a Vertical abandonment field
- 5b Horizontal abandonment field
- 6 Margin Perforation Blade
- 7 Forms Perforation Blade
- 7a Forms perforation blade
- 7b Forms perforation blade
- 8 Non-Cut Section
- 9 Forms Perforation Blade for Large Separation
- Flash printing dimension
- b Abandonment field dimension

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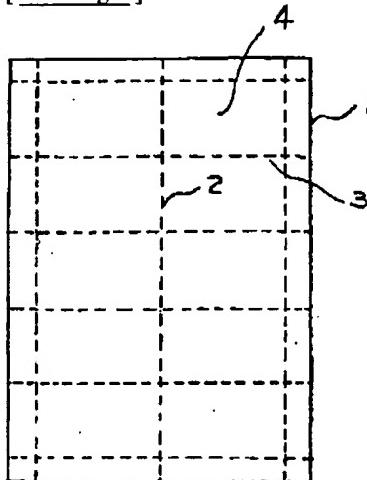
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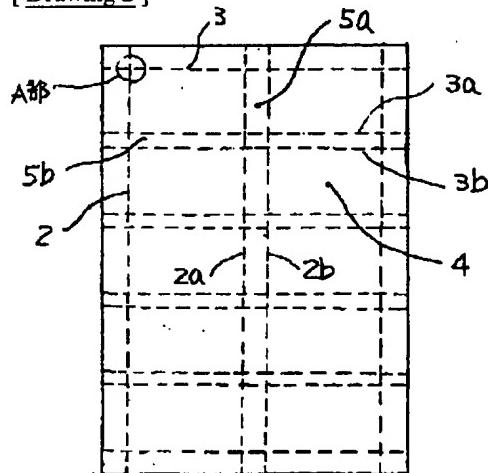
DRAWINGS

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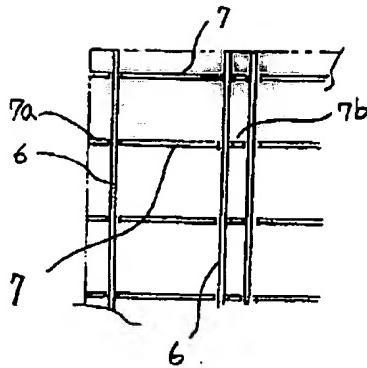
[ Drawing 1 ]



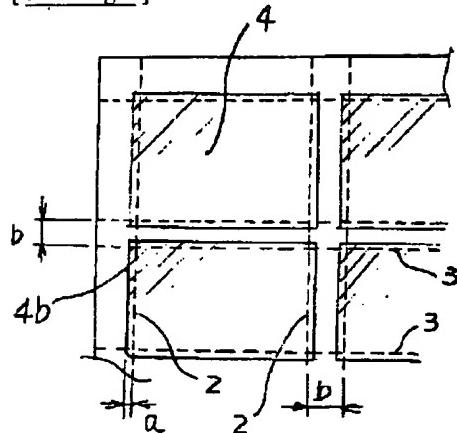
[ Drawing 2 ]



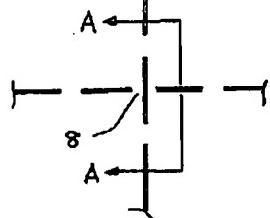
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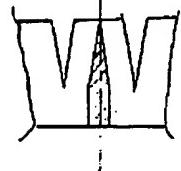
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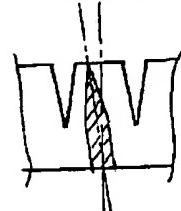
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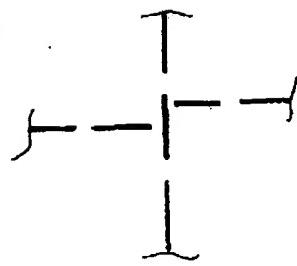
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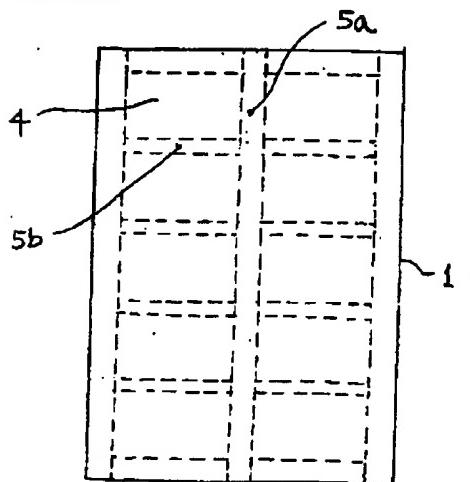
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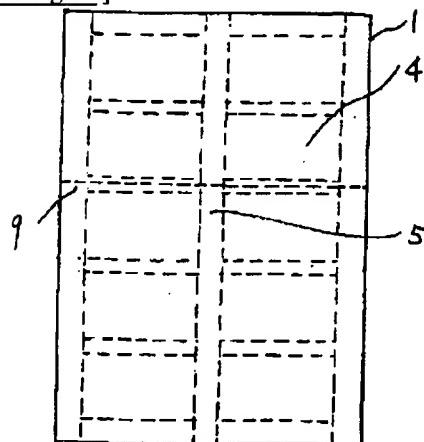
[ Drawing 8 ]



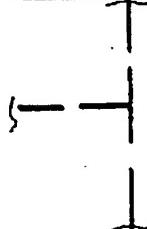
[ Drawing 9 ]



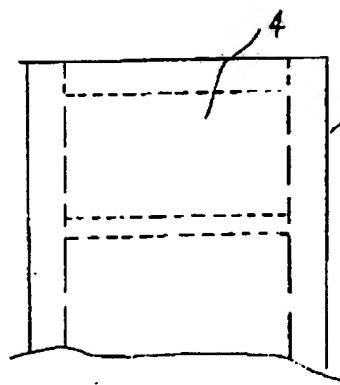
[ Drawing 10 ]



[ Drawing 11 ]



[ Drawing 12 ]



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